

CLAIMS

We claim:

1. A system for providing medical items comprising:

a computer, wherein the computer is in operative connection with ^athe data store, wherein the data store includes user data representative of a plurality of authorized users, item data representative of a plurality of medical items, and location data representative of storage locations in which the medical items are stored;

a user interface in operative connection with the computer, wherein the interface includes an input device;

a refrigerator, wherein a storage location for at least one medical item is ^{located}~~stored~~ in an interior area of the refrigerator, the refrigerator including a door, wherein access to the interior area is controlled by opening and closing the door;

a lock module operatively attached to the refrigerator, wherein the lock module is in operative connection with the computer, and wherein the lock module is

operative responsive to a signal from the computer to change the lock module from a locked to an unlocked condition, wherein in the locked condition the refrigerator is prevented from being opened and in the unlocked condition the door is enabled to be opened;

5 wherein responsive to a user inputting identification data through the input device of the interface corresponding to the data representative of an authorized user stored in the data store, the computer enables the user to input item indicia corresponding to ^a ~~the one~~ medical item through the input device, and wherein
10 the computer is operative responsive to input of the item indicia to output the signal changing the lock module to the unlocked condition.

2. The system according to claim 1 and wherein the lock module further comprises a visual indicator, and wherein the visual indicator provides an indication responsive to the signal that the door is enabled to be opened .

3. The system according to claim 1 and wherein the lock module further comprises a
15 door sensor, wherein the door sensor is operative to generate an open signal responsive to opening the door, and wherein the computer is operative responsive to the open signal to change the lock module to the locked condition, wherein when the door is next returned to a closed condition the door is held therein.

4. The system according to claim 1 wherein the lock module further comprises a manual unlocking mechanism, and wherein the lock module is enabled to be changed to the unlocked condition responsive to the manual unlocking mechanism.

5. The system according to claim 4 wherein the lock module includes a movable lever, and further comprising a catch, and wherein the lock module includes a pawl, wherein the catch is engageable to hold the pawl in a first lever position and to release the pawl in a second lever position, and wherein the pawl is operatively engageable with the door of the refrigerator, and further comprising a solenoid in operative connection with the lever, and wherein the manual unlocking mechanism is engageable with the lever, and wherein the lock module is changed to the unlocked condition by either the unlocking mechanism or the solenoid moving the lever from the first position to the second position.

6. The system according to claim 5 wherein the lever is rotatably movable about a pivot, and wherein the solenoid is engageable with the lever on a first side of the pivot and the manual unlocking mechanism is engageable with the lever on a second side of the pivot.

7. The system according to claim 5 wherein the catch includes a tapered step on the lever.

8. The system according to claim 5 wherein the manual unlocking mechanism includes a cylinder, and a projection rotatable in engagement with the cylinder, and wherein the projection is engageable with the lever to move the lever to the second position.

9. The system according to claim 1 and further comprising a sensor, wherein the sensor is operative to sense opening of the refrigerator door, and wherein the sensor is operative to generate an open signal responsive to opening the refrigerator door, and wherein the computer is operative responsive to the open signal to store data representative of an event of opening the refrigerator door in the data store.

10. The system according to claim 9 wherein the lock module includes a movable lever, and further comprising a catch, and wherein the lock module further includes a movable pawl, and wherein the lock module is held in the locked position when the catch engages the lever and pawl, and wherein the lock module further includes a solenoid, and wherein the solenoid is operative responsive to the signal to move the lever to disengage the catch, and wherein the pawl moves responsive to the door moving to the open position, and wherein the sensor is operative to sense the position of the pawl.

11. The system according to claim 10 and further comprising a bolt in operative connection with the door, and wherein in the closed position of the door the bolt extends inside the lock module and operatively engages the pawl.

12. The system according to claim 1 wherein the lock module is mounted in supporting connection with an external surface of the refrigerator, and further comprising a bolt in supporting connection with an external surface of the refrigerator door, and wherein in a closed position of the door the bolt extends inside the lock module.

13. The system according to claim 12 wherein the refrigerator door includes a front surface and a side surface, and wherein the bolt is operatively attached to both the front surface and the side surface of the door.

14. The system according to claim 12 wherein the bolt is attached to the door through a bolt supporting bracket, and wherein in the closed position of the door the bolt supporting bracket is adjacent the lock module so as to render the bolt inaccessible from outside the lock module.

15. The system according to claim 14 wherein the bolt supporting bracket is operatively connected to the refrigerator door through fasteners, and wherein the bolt supporting bracket further includes a cover, wherein the cover extends in overlying relation of the fasteners.

16. The system according to claim 1 wherein the input device includes a reading device, and wherein the item indicia is input through the reading device.

17. The system according to claim 16 wherein the refrigerator includes machine readable indicia thereon, and wherein the item indicia is input by reading the machine readable indicia with the reading device.

18. The system according to claim 16 and further comprising a report having machine readable indicia thereon, and wherein the item indicia is input by reading the machine readable indicia on the report.

19. The system according to claim 18 and further comprising a printer in operative connection with the computer, wherein the computer is operative to cause the printer to print the report.

20. The system according to claim 16 wherein the interior area of the refrigerator includes at least one machine readable indicia therein, whereby after opening the refrigerator door and taking the medical items stored therein a user is enabled to read the machine readable indicia, wherein the computer is operative responsive to the reading of the machine readable indicia to include data in the data store representative of the taking of the medical item from the interior area of the refrigerator.

21. The system according to claim 1 wherein when the lock module is in the unlocked condition and the door is opened, the lock module returns to the locked condition upon the subsequent closing of the door.

22. The system according to claim 9 wherein when the lock module is changed to the unlocked condition and the door is not opened for a time out period, the lock module returns to the locked condition, and wherein the computer is operative responsive to the lock module

returning to the locked condition without the door having been opened to store data representative of the door not being opened in the data store.

23. The system according to claim 1 wherein the lock module includes a retrofit assembly which is attached by fasteners to an exterior surface of the refrigerator.

24. A system for providing medical items comprising:

a computer, wherein the computer is in operative connection with ^athe data store, wherein the data store includes user data representative of a plurality of authorized users, item data representative of a plurality of medical items, and location data representative of storage locations in which the medical items are stored;

a user interface in operative connection with the computer, wherein the interface includes an input device;

a preexisting housing structure, wherein a storage location for at least one medical item is ^{located}stored in an interior area of the housing structure, the housing structure including a door, wherein access to the interior area is controlled by opening and closing the door.

37. The method according to claim 36 wherein the storing step includes storing in the data store data representative of a plurality of authorized users, wherein the authorized users are authorized to access medical items in the interior area of the refrigerator, and prior to the enabling step further comprising the steps of:

5 providing through an input device data representative of an authorized user;

comparing with the computer whether the data provided in the providing step corresponds to one of the authorized users, wherein in the absence of such correspondence the generating step, enabling step and opening step are not performed.

10 38. The method according to claim 37 wherein when in the comparing step the data corresponds to one authorized user, and the opening step is performed, the further storing step includes storing data representative of the one authorized user in correlated relation with the data representative of opening the door.

15 39. The method according to claim 27 and wherein the lock module further includes a manual unlocking mechanism, and after the enabling step further comprising the steps of:

preventing access to the interior area with the lock module;

a lock module mounted on an exterior surface of the housing structure, wherein the lock module is in operative connection with the computer, and wherein the lock module is operative responsive to a signal from the computer to change the lock module from a locked to an unlocked condition, wherein in the locked condition the door is prevented from being opened and in the unlocked condition the door is enabled to be opened;

wherein responsive to a user inputting identification data through the input device of the interface corresponding to the data representative of an authorized user stored in the data store, the computer enables the user to input item indicia corresponding to ^a~~the one~~ medical item through the input device, and wherein the computer is operative responsive to input of the item indicia to output the signal changing the lock module to the unlocked condition.

25. The system according to claim 24 wherein the lock module further includes a door sensor in operative connection with the door and the computer, and a latching device wherein the latching device is operative to selectively maintain the lock module in the locked and unlocked conditions, wherein the latching device is operative to hold the lock module in the unlocked position responsive to the signal, and thereafter the computer is operative to cause the output of a further signal, wherein the further signal changes the lock module to a locked condition and thereafter the latching device holds the lock module in the locked condition, and wherein the computer is operative to cause the further signal to be output responsive to the

earlier of the door sensor sensing opening of the door or the passage of a time delay period after output of the signal without the door sensor sensing opening of the door.

26. The system according to claim 25 wherein the latching device includes a permanent magnet latching solenoid.

5 27. A method comprising the steps of:

attaching a lock module to a refrigerator, wherein the lock module selectively enables accessing an interior area of the refrigerator;

placing a medical item in the interior area of the refrigerator;

storing in a data store data representative of a type associated with the medical item placed in the interior area;

inputting through an input device an input corresponding to the type of medical item stored in the interior area;

determining with a computer in operative connection with the data store, the lock module and the input device, that the type of medical item corresponding to the input is stored in the interior area;

generating a signal with the computer responsive to the determination that the medical item is stored in the interior area;

enabling access to the interior area with the lock module responsive to the signal generated by the computer.

5 28. The method according to claim 27 wherein the refrigerator comprises a body and a door, and wherein the attaching step comprises attaching the lock module to an exterior surface of the body, and a bolt supporting bracket to a further exterior surface of the door, wherein the bolt supporting bracket is in operative connection with a bolt, and wherein in the enabling step the lock module releases the bolt.

10 29. The method according to claim 28 wherein the attaching step further includes attaching the bolt supporting bracket to the further exterior surface of the door with at least one fastener, and then covering the fastener by installing a cover.

15 30. The method according to claim 28 wherein the lock module further comprises a visual indicator, and further comprising the step of indicating with the visual indicator that the interior of the refrigerator is enabled to be accessed.

31. The method according to claim 27 wherein the placing step further includes placing medical items in a plurality of storage locations, at least one of the locations being in the

interior area and at least one other location being outside the interior area, and wherein the storing step includes storing data representative of the types of medical items stored respectively in the location in the interior area and in the other location.

32. The method according to claim 31 wherein in the placing step a first type of medical item is placed in the storage location in the interior area and a second type of medical item is placed in the other storage location, and prior to the inputting step further comprising the step of displaying on a display device indicia representative of both the first type of medical item and the second type of medical item.

33. The method according to claim 31 wherein the other location in which the second type of medical item is stored is in a dispenser, wherein the dispenser is in operative connection with the computer and the input device, and further comprising the steps of:

inputting through the input device a second input corresponding to the second type of medical item stored in the dispenser;

determining with the computer that the second type of medical item is stored in the dispenser;

generating a second signal with the computer responsive to the determination that the second type of medical item is stored in the dispenser;

dispensing the second type of medical item from the second location in the dispenser responsive to the second signal.

34. The method according to claim 27 and prior to the inputting step further comprising the step of labeling the refrigerator with a machine readable indicia corresponding to the interior area, and wherein the inputting step includes reading the machine readable indicia with a reading device.

35. The method according to claim 34 wherein the machine readable indicia includes a bar code and the reading device includes a bar code scanner.

36. The method according to claim 27 wherein access to the interior area is controlled by a refrigerator door, and further comprising the steps of:

opening the refrigerator door, whereby the interior area is accessible;

sensing with a sensor, in operative connection with the computer that the refrigerator door has been opened;

further storing the data store data representative of the opening of the door.

manually actuating the unlocking mechanism on the lock module; and

accessing the interior area.

40. The method according to claim 39 wherein the lock module includes a lever movable about a pivot, wherein movement of the lever in a first rotational direction enables accessing the interior area, and wherein in the enabling step a first mechanism engages the lever on a first side of the pivot and moves the lever in the first direction, and wherein in the manually actuating step a second mechanism engages the lever on an opposed side of the pivot and moves the lever in the first direction.

41. The method according to claim 27 and further comprising the steps of:

accessing the interior area by opening a door;

sensing with a sensor that the door is open, wherein the sensor is in operative condition with the computer;

changing a condition of the lock module responsive to the sensor sensing that the door has been opened, wherein the door is held in a closed position by the lock module when the door is next closed.

42. The method according to claim 27 wherein access to the interior area is controlled by a door, and wherein the storing step includes storing in the data store data representative of a plurality of authorized users, wherein the authorized users are authorized to access medical items in the interior area of the refrigerator, and prior to the enabling step further comprising the steps of:

providing through an input device data representative of an authorized user;

comparing with the computer whether the data provided in the providing step corresponds to one of the authorized users, the enabling step being performed responsive to the data corresponding to one of the authorized users;

sensing with a sensor in operative connection with the computer that the door has not been opened;

generating a further signal with the computer a time period after the door is enabled to be opened responsive to the sensor not sensing opening of the door, wherein the further signal is operative to cause the lock module to hold the door in a closed position.

43. The method according to claim 42 and further comprising the step of storing in the data store data representative of the door being enabled to open by the one authorized user, and not being opened.

44. A method comprising the steps of:

5 attaching a lock module to a preexisting housing structure, wherein the lock module selectively enables accessing an interior area of the housing structure;

placing a medical item in the interior area of the housing structure;

storing in a data store data representative of a type associated with the medical item placed in the interior area;

10 inputting through an input device an input corresponding to the type of medical item stored in the interior area;

determining with a computer in operative connection with the data store, the lock module and the input device, that the type of medical item corresponding to the input is stored in the interior area;

generating a signal with the computer responsive to the determination that the medical item is stored in the interior area;

enabling access to the interior area with the lock module responsive to the signal generated by the computer.

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2025 RELEASE UNDER E.O. 14176